



SEQUENCE LISTING

<110> YUAN, Chong-Sheng

<120> DETERMINATION OF IONS USING
ION-SENSITIVE ENZYMEs

<130> 466992001100

<140> US 10/665,883

<141> 2003-09-19

<160> 18

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> 40%-100% identity to leader sequence

<400> 1

Met Gly Gly Ser Gly Asp Asp Asp Asp Leu Ala Leu
1 5 10

<210> 2

<211> 356

<212> PRT

<213> Artificial Sequence

<220>

<223> 40%-100% identity to the biphosphate nucleotidase

<400> 2

Ala	Leu	Glu	Arg	Glu	Leu	Leu	Val	Ala	Thr	Gln	Ala	Val	Arg	Lys	Ala
1		5						10				15			
Ser	Leu	Leu	Thr	Lys	Arg	Ile	Gln	Ser	Glu	Val	Ile	Ser	His	Lys	Asp
	20			25					30						
Ser	Thr	Thr	Ile	Thr	Lys	Asn	Asp	Asn	Ser	Pro	Val	Thr	Thr	Gly	Asp
	35			40			45								
Tyr	Ala	Ala	Gln	Thr	Ile	Ile	Ile	Asn	Ala	Ile	Lys	Ser	Asn	Phe	Pro
	50		55					60							
Asp	Asp	Lys	Val	Val	Gly	Glu	Ser	Ser	Gly	Leu	Ser	Asp	Ala		
	65		70		75			80							
Phe	Val	Ser	Gly	Ile	Leu	Asn	Glu	Ile	Lys	Ala	Asn	Asp	Glu	Val	Tyr
	85		90				95								
Asn	Lys	Asn	Tyr	Lys	Asp	Asp	Phe	Leu	Phe	Thr	Asn	Asp	Gln	Phe	
	100		105				110								
Pro	Leu	Lys	Ser	Leu	Glu	Asp	Val	Arg	Gln	Ile	Ile	Asp	Phe	Gly	Asn
	115			120				125							
Tyr	Glu	Gly	Gly	Arg	Lys	Gly	Arg	Phe	Trp	Cys	Leu	Asp	Pro	Ile	Asp
	130		135				140								
Gly	Thr	Lys	Gly	Phe	Leu	Arg	Gly	Glu	Gln	Phe	Ala	Val	Cys	Leu	Ala
	145		150				155			160					
Leu	Ile	Val	Asp	Gly	Val	Val	Gln	Leu	Gly	Cys	Ile	Gly	Cys	Pro	Asn
	165		170					175							
Leu	Val	Leu	Ser	Ser	Tyr	Gly	Ala	Gln	Asp	Leu	Lys	Gly	His	Glu	Ser
	180		185				190								
Phe	Gly	Tyr	Ile	Phe	Arg	Ala	Val	Arg	Gly	Leu	Gly	Ala	Phe	Tyr	Ser

195	200	205
Pro Ser Ser Asp Ala Glu Ser Trp Thr Lys Ile His Val Arg His Leu		
210	215	220
Lys Asp Thr Lys Asp Met Ile Thr Leu Glu Gly Val Glu Lys Gly His		
225	230	235
Ser Ser His Asp Glu Gln Thr Ala Ile Lys Asn Lys Leu Asn Ile Ser		
245	250	255
Lys Ser Leu His Leu Asp Ser Gln Ala Lys Tyr Cys Leu Leu Ala Leu		
260	265	270
Gly Leu Ala Asp Val Tyr Leu Arg Leu Pro Ile Lys Leu Ser Tyr Gln		
275	280	285
Glu Lys Ile Trp Asp His Ala Ala Gly Asn Val Ile Val His Glu Ala		
290	295	300
Gly Gly Ile His Thr Asp Ala Met Glu Asp Val Pro Leu Asp Phe Gly		
305	310	315
Asn Gly Arg Thr Leu Ala Thr Lys Gly Val Ile Ala Ser Ser Gly Pro		
325	330	335
Arg Glu Leu His Asp Leu Val Val Ser Thr Ser Cys Asp Val Ile Gln		
340	345	350
Ser Arg Asn Ala		
355		

<210> 3

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> 40%-100% identity to the second bacterial leader sequence

<400> 3

Lys	Gly	Glu	Leu	Glu	Gly	Leu	Pro	Ile	Pro	Asn	Pro	Leu	Leu	Arg	Thr
1															15
Gly															

<210> 4

<211> 356

<212> PRT

<213> Artificial Sequence

<220>

<223> Chimeric protein

<400> 4

Ala	Leu	Glu	Arg	Glu	Leu	Leu	Val	Ile	Thr	Gln	Ala	Val	Arg	Lys	Ala
1															15
Ser	Leu	Leu	Thr	Lys	Arg	Ile	Gln	Ser	Glu	Val	Ile	Ser	His	Lys	Asp
															30
Ser	Thr	Thr	Ile	Thr	Lys	Asn	Asp	Asn	Ser	Pro	Val	Thr	Thr	Gly	Asp
															45
Tyr	Ala	Ala	Gln	Thr	Ile	Ile	Ile	Asn	Ala	Ile	Lys	Ser	Asn	Phe	Pro
															60
Asp	Asp	Lys	Val	Val	Gly	Glu	Glu	Ser	Ser	Gly	Leu	Ser	Asp	Ala	
65															80
Phe	Val	Ser	Gly	Ile	Leu	Asn	Glu	Ile	Lys	Ala	Asn	Asp	Glu	Val	Tyr
															95
Asn	Lys	Asn	Tyr	Lys	Lys	Asp	Asp	Phe	Leu	Phe	Thr	Asn	Asp	Gln	Phe
															110
Pro	Leu	Lys	Ser	Leu	Glu	Asp	Val	Arg	Gln	Ile	Ile	Asp	Phe	Gly	Asn
115															125

Tyr Glu Gly Gly Arg Lys Gly Arg Phe Trp Cys Leu Asp Pro Ile Asp
 130 135 140
 Gly Thr Lys Gly Phe Leu Arg Gly Glu Gln Phe Ala Val Cys Leu Ala
 145 150 155 160
 Leu Ile Val Asp Gly Val Val Gln Leu Gly Cys Ile Gly Cys Pro Asn
 165 170 175
 Leu Val Leu Ser Ser Tyr Gly Ala Gln Asp Leu Lys Gly His Glu Ser
 180 185 190
 Phe Gly Tyr Ile Phe Arg Ala Val Arg Gly Leu Gly Ala Phe Tyr Ser
 195 200 205
 Pro Ser Ser Asp Ala Glu Ser Trp Thr Lys Ile His Val Arg His Leu
 210 215 220
 Lys Asp Thr Lys Asp Met Ile Thr Leu Glu Gly Val Glu Lys Gly His
 225 230 235 240
 Ser Ser His Asp Glu Gln Thr Ala Ile Lys Asn Lys Leu Asn Ile Ser
 245 250 255
 Lys Ser Leu His Leu Asp Ser Gln Ala Lys Tyr Cys Leu Leu Ala Leu
 260 265 270
 Gly Leu Ala Asp Val Tyr Leu Arg Leu Pro Ile Lys Leu Ser Tyr Gln
 275 280 285
 Glu Lys Ile Trp Asp His Ala Ala Gly Asn Val Ile Val His Glu Ala
 290 295 300
 Gly Gly Ile His Thr Asp Ala Met Glu Asp Val Pro Leu Asp Phe Gly
 305 310 315 320
 Asn Gly Arg Thr Leu Ala Thr Lys Gly Val Ile Ala Ser Ser Gly Pro
 325 330 335
 Arg Glu Leu His Asp Leu Val Val Ser Thr Ser Cys Asp Val Ile Gln
 340 345 350
 Ser Arg Asn Ala
 355

<210> 5
 <211> 1176
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence encoding a chimeric protein

<400> 5
 atgggcggat ccgggtatga cgatgaccc tc gccc ttgc at tggaa agaga attattgggtt 60
 gcaactcaag ctgtacgaaa ggcgtcttta ttgactaaga gaattcaatc tgaagtgatt 120
 tctcacaagg actccactac tattaccaag aatgataatt ctccagtaac cacaggtat 180
 tatgctgcac aaacgatcat cataaatgct atcaagagca attttcctga tgataaggta 240
 gtttgtaaag aatcctcatc aggatttgac gacgcattcg tctcaggaaat tttaaacgaa 300
 ataaaaagcca atgacgaagt ttataacaag aattataaaaa agatgattt tctgtttaca 360
 aacgatcagt ttccgctaaa atctttggag gacgtcaggc aaatcatcga tttcggcaat 420
 tacgaagggtg gtagaaaaagg aagattttgg tttttggatc ctattgacgg aaccaagggg 480
 tttttaagag gtgaacagtt tgcgtatgt ctggccttaa ttgtggacgg ttttggatc 540
 ctttgttata ttggatgccc caacttagtt ttaagttttt atggggccca agatttggaaa 600
 ggcgcgttgc cattttgtta tatcttcgt gctgttagag gtttaggtgc cttctattct 660
 ccatcttcag atgcagatgc atggacccaa atccacgtta gacactaaa agacactaaa 720
 gacatgatta cttagaggg agttgaaaag ggacactctt ctcgtatgc acaaactgct 780
 atcaaaaaca aactaaatat atccaaatct ttgcacttgg attctcaagc caagtactgt 840
 ttgttagcat tgggtttagc agacgtatat ttacgtctgc ctatcaaact ttcttaccaa 900
 gaaaagatct gggaccatgc tgcaggcaac gtttattgtcc atgaagctgg aggttatccat 960
 acagatgcca tggaaagatgt tcctctagac ttccgttaacg gttagaacgt agtacgaaag 1020
 ggagttatacg cgtcaagtgg cccacgcgag ttacatgact tgggtgttc tacatcatgc 1080
 gatgtcattc agtcaagaaa cggcaaggc gagcttgaag gtttgccat ccctaaccct 1140
 ctccctccgtt cccgtcatca tcaccatcac cattga 1176

<210> 6
 <211> 7

<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 6
Asp Tyr Lys Asp Asp Asp Lys
1 5

<210> 7
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 7
Tyr Pro Tyr Asp Val Pro Asp Tyr Ala
1 5

<210> 8
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 8
Cys Gln Asp Leu Pro Gly Asn Asp Asn Ser Thr
1 5 10

<210> 9
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 9
Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
1 5 10

<210> 10
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 10
His His His His His
1 5

<210> 11

<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 11
Asp Thr Tyr Arg Tyr Ile
1 5

<210> 12
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 12
Glu Tyr Met Pro Met Glu
1 5

<210> 13
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 13
Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
1 5 10

<210> 14
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 14
Ser Phe Pro Gln Phe Lys Pro Gln Glu Ile
1 5 10

<210> 15
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 15
Lys Gly Phe Ser Tyr Phe Gly Glu Asp Leu Met Pro
1 5 10

<210> 16
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 16
Gln Tyr Pro Ala Leu Thr
1 5

<210> 17
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 17
Gln Arg Gln Tyr Gly Asp Val Phe Lys Gly Asp
1 5 10

<210> 18
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary epitope tag

<400> 18
Glu Val His Thr Asn Gln Asp Pro Leu Asp
1 5 10